

INFORMATION STOVEPIPES: MAKE 'EM WORK FOR YOU!

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Introduction

A military “stovepipe” is a product or service that is developed for and funded by a particular user community. Stovepipes satisfy Service requirements and are driven by funding priorities to support Service missions. Stovepipe products tend to remain with the user community that initiates their development. Stovepipes also tend to be fostered by an acquisition process characterized by tight budgets and the user community’s funding priorities.

Stovepipes have existed since the military began about 200 years ago. Early intelligence systems were usually stovepipes and included human-intelligence and code-breaking collection products. More recent stovepipe systems include data collection by aircraft, satellites, and sensors.

The community responsible for funding a stovepipe is normally the initial user, and information products sometimes migrate into that user’s planning and operations. Stovepipes often result from the efforts of technologists to develop specialized products for the initiating user. Since World War II, stovepipes have become a high-tech approach to achieve Service initiatives.

The user community tends to keep stovepipe-derived information to itself because funds are not available for sharing it and because older technologies make sharing difficult. In addition, there is often shortsightedness by initiating Services, and the need for sharing has rarely been apparent to other potential users. However, information becomes more valuable to potential users when it is

widely shared and fused with other pieces of information. Combined, this information can be used to ensure greater success in conflict. The need for information is especially important in today’s terrorism environment, when quick responses and short decision timelines are necessary.

Background

In the past, communication stovepipes served each user community well. Today, however, the Services and the joint staff are slowly recognizing their timeline limitations. Without information sharing, operations slow down, decisionmaking timelines get longer, units operate more autonomously than they should, and operational tempo suffers.

In World War II, technical advances in communications and information collection began to shorten the timelines of conflict. The desire for better connectivity among the Services and Allied commands was prompted by the need for more precise timing and coordination of tactics such as land invasions, joint air-land operations, pinpoint bombing, and close air support. The increased sophistication of these tactics revealed serious flaws in a stovepipe acquisition process that hampered operations involving disparate units. The Services began to realize that combatants’ lives and the success of military operations were impacted by short timelines and that information sharing was of increasing critical importance.

Rigid command attitudes, stringent budgets, and “in-the-box” thinking led to a “knowledge-is-power” mentality which, in turn, promoted an antisharing, go-it-alone posture. But joint operations demand shortening the timelines of conflict, and stovepipes came under even more criticism. Yet stovepipes have been deeply embedded in the military psyche, and it has never been clear how to share valuable pieces of information collected by disparate groups of users.

There have been attempts to address the insularity fostered by stovepipes, such as the Army’s horizontal technology integration effort. These attempts have been impeded by an acquisition process that is difficult to change. Because the acquisition process crosses Service lines, it is extremely difficult for one Service to solve the problem without other Services also addressing the problem.

The same technologies needed for developing information stovepipes have led to innovations that also increase the pace of conflict. However, the connectivity problems caused by stovepipes have slowed other processes down, particularly decisionmaking. Often, this is the result of incomplete information. The very success of stovepipes has fostered their criticism. Fortunately, those same communication technologies that prompted criticism can now be used to fuse stovepipe-derived information together, allowing information to be accessed by a larger group. The seeds of the problem can be the seeds of the solution!

Sowing The Seeds Of Success

Efforts by the Office of the Secretary of Defense (OSD), the joint Services, and other agencies led to important improvements in information sharing. For example, joint battlefield and intelligence systems were developed to serve joint users at high echelons. Some of these systems include military and commercial satellites and aircraft, missile detection systems, and the Joint Surveillance Targeting Acquisition Radar. Most of these systems, however, are slow and do not support the much faster timelines needed by lower echelons in conflict. This causes the lower echelons to suffer from limited access to data and a limited ability to task the collection system. In principle, however, quick distribution of critical information across the traditional, limited user boundaries is now both technically possible and affordable, particularly in our growing digital environment.

Technologies have emerged that will enable shared information to be distributed among lower echelons in timeframes that will meet their needs. These technologies include aided target recognition; smart portals; mobile wireless (e.g., pagers and personal digital assistants); techniques for data extraction, information fusion, and presentation (displays and visualization); automatic data routers and procedures for assigning priorities; techniques for synchronizing distributed databases; and technologies to permit information collection and distribution in a secure environment.

Automatically collected, prioritized, and routed data, quickly displayed at each echelon, will be key to the success of future military conflicts and to employment of rapid counterterrorism measures. Once these efforts are accomplished, voice communications will convert displayed information into the synchronized knowledge needed to generate operational orders. Digital techniques will also permit information sharing between military and civilian

units—another critical element in countering terrorism.

Resolution

We must harness information collected by stovepipes, not fight the way stovepipes are acquired. Stovepipes serving our high echelons already deliver information that is shared among those echelons. Sharing is slow, but it's getting faster. Voice and data connectivity is improving among high echelons of the Services and with our allies. The Services are using digital techniques to make it easier to display information in formats that can be quickly understood by all echelons. The Navy is adopting a concept of network-centric warfare that quickly shares information among its fighting platforms at data rates appropriate to each platform. Additionally, the Army's Future Combat Systems will use digital information to transform the way soldiers communicate with each other and with their support elements.

Information stovepipes can be made to serve almost every echelon in the military while data collection is performed. The challenge now is to harness that information: sort it, determine who needs it, prioritize it, and route it to appropriate users in formats they can understand, in quantities that can easily be displayed and digested, and in timeframes that conform to each user's planning and operations cycle.

OSD and the Services have conceived a virtual database—the Global Information Grid (GIG)—into which information can be fed and quickly shared. Everyone feeds the GIG, and everyone shares the information available in the GIG. But the devil is in the details. The Navy's concept of network-centric warfare and the Army's concept of the tactical infosphere are two major manifestations of how the GIG can be used to derive databases, collect information smartly, and pass relevant information quickly.

Conclusion

Challenges in harnessing information from stovepipes are formidable, but straightforward. Data sharing must be accomplished in ways that will not flood moving units with information that is too complex, too voluminous, and too late to be useful. We must decide which types of data should be automatically passed up and down the chain of command, and lower echelon commanders must have the ability to quickly obtain specialized information that is not routinely passed downward. We must more effectively share lower echelon information with lateral and supporting units and with higher echelons. We must develop effective "bell-ringers" (i.e., attention-getting mechanisms) that will differentiate high-priority, timely information from routine transmissions. Further, we must tailor available and emerging technologies to help us accomplish this more effectively.

Digital costs are declining, making the harnessing of information more affordable. The approach discussed in this article will minimize frustration, optimize information sharing, and harness our stovepipes to more effectively work for us. Our efforts are succeeding, but we must continue to develop better techniques for gathering, sorting, prioritizing, distributing, and displaying information in user-friendly ways. This process of tailoring information will make future warfighting simpler to understand and easier to execute. Now let's get on with the job!

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